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10ME665

Sixth Semester B.E. Degree Examination, Jan./Feb. 2021

Non-Traditional Machining

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART – A

- 1 a. Can “Non Traditional Machining” processes replace conventional process? Justify your answer with reference to the following:
i) Technical feasibility. ii) Economic considerations. (07 Marks)
b. Explain the need and characteristic features of Non Traditional Machining. (06 Marks)
c. What do you understand by the term “Ultrasonics”? Explain with simple, sketch, the principle of operation of ultrasonic machining. (07 Marks)
- 2 a. Discuss the effect of the following parameters on the rate of material removal and surface finish obtainable in ultrasonic machining:
i) Amplitude and frequency of vibration. ii) Abrasive grain size. iii) Static load. (10 Marks)
b. List out the advantages, disadvantages and applications of USM. (10 Marks)
- 3 a. Sketch the setup for “Abrasive Jet Machining” process. State the main elements of the process and write two important features of each element. (10 Marks)
b. Explain the following variables that influence the rate of metal removal and accuracy of machining in Abrasive Jet Machining.
i) Stand off distance ii) Abrasive flow rate iii) Nozzle pressure iv) Mixing ratio (10 Marks)
- 4 a. Explain with a neat sketch, the Electro Chemical Machining (ECM) process. (08 Marks)
b. Explain the elements of ECM. (08 Marks)
c. What are the functions of electrolyte? Mention any two electrolytes used in ECM Process. (04 Marks)

PART – B

- 5 a. Explain the sequence of operation in chemical machining process. (07 Marks)
b. List the factors to be considered in the selection of etchants in chemical machining. (05 Marks)
c. Discuss the following in chemical machining process:
i) Etchants ii) Maskants. (08 Marks)
- 6 a. Explain the working principle of Electrical Discharge Machining (EDM) with a neat sketch. (10 Marks)
b. Mention the advantages, disadvantages and applications of EDM. (10 Marks)
- 7 a. With a neat sketch explain briefly the working principle of Plasma Arc Machining. List out the applications of PAM. (10 Marks)
b. What are general guidelines for designing the torch for PAM process? (10 Marks)
- 8 Write short notes on the following:
a) Laser Beam Machining b) Electron Beam Machining
c) Dielectric fluids used in EDM. d) Applications of LBM and EBM (20 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.